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Journal of the Society of Arts.

FRIDAY, SEPTEMBER 6, 1867.

Announcements by the Council.

ARTIZANS' VISITS TO PARIS.

Her Majesty's Government have granted to the Society of Arts, in aid of the fund now being raised by the Society for assisting workmen, specially selected from various trades, to visit and report on the Paris Exhibition, the sum of £500, conditional on the Society raising a like amount by public subscription.

The following is the list of subscriptions up to the present date:—

H.R.H. THE PRINCE OF WALES, President ..	£31 10 0
HER MAJESTY'S GOVERNMENT (conditional) ..	500 0 0
Society of Arts ..	105 0 0
Earl Granville, K.G. ..	5 0 0
Lord de L'Isle ..	10 0 0
Thomas Twining ..	2 2 0
Sir J. P. Boileau, Bart. ..	5 0 0
George Godwin, F.R.S. ..	1 1 0
Vice-Chancellor Sir W. Page Wood, F.R.S. ..	10 0 0
Sir W. H. Bodkin (Assistant-Judge) ..	3 3 0
Sir Rowland Hill, K.C.B. ..	3 3 0
Benjamin Shaw ..	2 2 0
Alfred Davis ..	10 10 0
Eugène Rimmel ..	5 5 0
Frederick Mocatta ..	2 2 0
James Marshall ..	2 2 0
Robert Dawbarn ..	1 0 0
Henry Vaughan ..	10 10 0
Philip Sancton ..	5 0 0
Somerset A. Beaumont ..	5 0 0
Decimus Burton, F.R.S. ..	1 0 0
W. Botly ..	1 1 0
Professor Robert Bentley ..	2 2 0
John Stuart Mill, M.P. ..	1 1 0
G. F. Wilson, F.R.S. ..	2 2 0
Henry Creed ..	1 1 0
The Marquis of Salisbury, K.G. ..	10 0 0
D. Robertson Blaine ..	2 2 0
William Hawes ..	2 2 0
Seymour Teulon ..	1 1 0
G. N. Hooper ..	2 2 0
Lord Taunton ..	5 0 0
Henry Cole, C.B. ..	1 0 0
A. Robb ..	1 1 0
S. Andrews ..	1 1 0
Thomas Dixon ..	1 1 0
Charles Telford ..	1 1 0
Edmund Burke ..	2 0 0
W. H. Gore Langton, M.P. ..	5 0 0
J. R. Fowler ..	1 0 0
John Rutson ..	1 1 0
W. Fothergill Cooke ..	2 2 0
J. P. Gassiot, F.R.S. ..	5 5 0
The Duke of Devonshire ..	10 0 0
Messrs. Chawner and Co. ..	2 2 0
Chas. Brooke, F.R.S. ..	1 1 0
T. Chappell ..	2 2 0
C. Candy ..	2 0 0
Alfred Haines ..	2 2 0
Major-General Sir William Gordon, K.C.B. ..	2 2 0
Bartlett Hooper ..	2 2 0
Brought forward £795 7 0	
Carry forward £795 7 0	
Collected in response to a Circular issued by the Birmingham Chamber of Commerce.	
G. Dixon, M.P., Birmingham 5 5 0	
Messrs. Smith and Wright, Birmingham 5 5 0	
Messrs. Griffiths and Browett, Birmingham 5 5 0	
Henry Weiss, Birmingham 2 2 0	
W. H. M. Blews, Birmingham 2 2 0	
W. Middlemore, J.P., Birmingham 5 5 0	
Thomas Lloyd, Birmingham 2 2 0	
Messrs. Elkington and Mason, Birmingham 5 5 0	
Messrs. John Hardman and Co., Birmingham 2 2 0	
Messrs. F. and C. Osler, Birmingham 5 5 0	
The Proprietors of the <i>Birmingham Journal and Daily Post</i> 2 2 0	
The Proprietors of the <i>Birmingham Gazette</i> 2 2 0	
R. L. Chance, Birmingham 2 2 0	
T. Avery, Birmingham 2 2 0	
W. Tonks and Sons, Birmingham 2 2 0	
W. Lucas Sargent, Birmingham 2 2 0	
— Mountain (Messrs. Walter, May, and Co.), Birmingham 2 2 0	
J. A. Williams, Birmingham 2 2 0	
Henry Charlton, Birmingham 2 2 0	
W. Bartlett and Sons, Birmingham 5 0 0	
John P. Turner, Birmingham 0 10 6	
W. H. Avery, Birmingham 2 2 0	
Messrs. Peyton and Peyton, Birmingham 3 3 0	
James Cartland, Birmingham 2 2 0	
Carry forward £954 17 0	

Carry forward £795 7 0

Carry forward £954 17 0

Brought forward ..	£954 17 0
Messrs. Smith and Chamberlain, Birmingham	2 2 0
Messrs. Baker and Son, Birmingham	2 2 0
Messrs. Hinks and Wells, Birmingham	2 2 0
Messrs. Van Wart and Co., Birmingham	5 0 0
Messrs. Evans and Askin, Birmingham	2 2 0
C. Shaw, Birmingham	2 2 0
James Barwell, Birmingham	1 1 0
Messrs. Chance and Co., Birmingham	5 5 0
*Messrs. Ashford and Winder, Birmingham	10 0 0
*William Aston, Birmingham	10 0 0
*Messrs. Chance and Co., Birmingham (2nd donation)	5 5 0
*Messrs. Griffiths and Browett, Birmingham (2nd donation)	5 5 0
*Messrs. Peyton and Co., Birmingham (2nd donation)	2 2 0
Messrs. Gammon and Co., Birmingham	2 2 0
Messrs. Messengers and Co., Birmingham	5 5 0
Pemberton and Sons, Birmingham	2 2 0
Total ..	£1,018 14 0

Subscriptions may be forwarded to the Financial Officer, at the Society's House.

The following workmen have already been selected, and many of them are now in Paris:—

NAME.	TRADE.
Connolly, Thomas	Mason.
Luorافت, B.	Chairs and sofas.
Whiteing, Geo.	Grainer and decorator.
Kay, Alexr.	Joiner.
McEwen, J.	Mason.
Forbes, G. B.	"Special reporter."
Whiteing, Richd.	Decorator.
Green, Aaron	Potter.
Beardmore, Wm.	Cabinet maker.
Hooper, C. A.	Leather worker.
Blunt, Walter	Woodworking machinery.
Walker, Wm.	Ribbon weaving.
Wilkie, Thos.	"
Booth, Laurence	Watch trade.
Gutteridge, Joseph	Horticulturist.
Gregory, John	Lace trade.
Stringer, James	"
Stanton, George	Hosiery trade.
Bird, Joseph	Cutlery.
Dexter, George	Saw maker.
Smith, Edward	Floor and wall tiles and pavements.
Kendall, George	Engineer.
Caunt, Geo.	Silversmith.
Wilson, John	Tailor.
Bramhall, Wm.	Foreman, india-rubber works.
Cooper, Samuel	Art metal workman.
Coningsby, R.	Architectural metal worker
Evans, J.	Carpenter.
Rosmussen, P. A.	Shipwright.
Sinclair, R.	Bricklayer.
Bourne, W.	Joiner.
Letheren, W.	Die-sinker.
Winstanley, T. W.	Bricklayer.
Prior, J. D.	Ivory carver.
Mondy, E. F.	Engraver.
Jeffery, J.	Silver chaser.
Hughes, J. W.	Glass painter.
Elliott, W.	Cabinet draughtsman.
Howell, G.	Silversmith.
Bentley, J.	Wood carver.
Berry, G.	"
Barrett, R.	"
Kirchoff, F.	"
Jacob, T.	"
Page, G.	"
Mackie, J.	"
Baker, R.	"

NAME.	TRADE.
Genth, L.	Bookbinder.
Randall, J.	China painter.
Oats, Francis	Mining.
Jung, H.	Watchmaker.
SENT FROM BIRMINGHAM.	
Taylor, J.	Gas-fitting, chandeliers, and lamps.
Bayley, Thomas	Plumbers' brass foundry.
Gorman, William	Cabinet , &c.
Dry, Henry	General
Fowler, Henry	Labour-saving machines.
Clay, John	Saddles and bridles.
Thompson, Frederick ..	Harness and leather work.
Plampin, James	Jewellery and gilt toys.
Johnson, Thomas	Buttons.
Bridges, Wm.	Buttons, metal caps, tools, and metal ornaments.
Hibbs, Charles	Guns, &c.
Sargeant, David	Papier-maché, &c.
Archer, Thos.	Japanning.
Guise, Wm.	Needles and fish-hooks.
Pearsall, Richd.	Glassfor glazing purposes, plate glass, &c.
Swene, W. S.	," (fancy.)
Wilkinson, T. J.	," (practical manipulation.)
Moore, Chas. W.	Die-sinking.
Poole, Edwin	Tinplate-working.
Whitehouse, Benj.	Railway carriage building.
Jackson, F.	General ornament.
Deeley, W. J.	Jewellery, with diamonds and precious stones.
Fellows, Henry	Electro-plate and plated wares.
Petit, J. L.	Steel pens.
Ansell, James	Church and other bells.
Fisher, John	Gas and other tubes.
Dodd, J.	Chandeliers and gas-fittings.

M. Haussoullier, the officer in charge of the British Workmen's Hall at the Paris Exhibition, and of the arrangements for affording all kinds of facilities, reports that upwards of 1,700 artizans used the Hall in the month of August, and that visits were made, generally by parties of about five artizans each, to 161 workshops of different kinds. Some artizans visited more than one workshop. M. Haussoullier adds, "The men sent by the Society of Arts are by far the most intelligent upon the whole, and are most anxious in their inquiries upon the *conditions économiques et morales* of the French artizans."

Messrs. J. M. Johnson and Sons have kindly placed at the disposal of the Council a number of their five-shilling English Catalogues of the Exhibition, sufficient to present each workman with a copy.

Proceedings of Institutions.

WHITBY INSTITUTE.—The report for last year, being the twenty-first, records a serious decrease in the number of members, and lessening of the income of the society. This decrease has not, however, taken place to any marked extent amongst the yearly members; but the shorter-period members have fallen off greatly. The jet exhibition, to which a donation of £5 was given by the Society of Arts, was most successful. No less than £62 15s. was given in prizes. The goods shown far surpassed, both in number and taste, those of former years, and the attendance of visitors was larger than

heretofore. The exhibition was opened by the Marchioness of Normanby, and in the distribution of prizes the Marquis of Normanby presided. During the winter months a series of penny readings was instituted, which succeeded admirably. The attendance was always good, and generally the room was crowded to excess. In a pecuniary sense, also, the readings were of some advantage to the Institute, as they left a profit of £9 17s. 7d. An arrangement was made for the drawing class to meet three evenings in each week, instead of one. The charge for admission to the class was fixed at the moderate sum of fourpence per week, and the attendance increased largely, the total number of pupils reaching 54, several of whom had been students in former years; and one pleasing character of the class was the increased attendance of youths engaged in the jet trade, and for their special benefit a class for original designing was commenced. Still further to encourage this useful class, Mrs. Thomas Bagnall has offered £4, to be given in prizes, for the best designs for jet articles. The general instruction class was conducted, as before, and, in addition to these, a chemical class was carried on for a part of the winter season.

EXAMINATION PAPERS, 1867.

The following are the Examination papers set in the various subjects at the Final Examination held in April last:—

(Continued from page 639.)

LATIN AND ROMAN HISTORY.

THREE HOURS ALLOWED.

SECTION I.

Translate:—

Parcus deorum cultor et infrequens,
Insanientis dum sapientiae
Consultus erro, nunc retrorsum
Vela dare atque iterare cursus
Cogor relictos: namque Diespiter,
Igni corusco nubila dividens
Plerumque, per purum tonantes
Egit equos volucrēisque currum,
Quo bruta tellus et vaga flumina,
Quo Styx et invisi horrida Taenari
Sedes Atlanteusque finis
Concūtitur. Valet ima summis
Mutare, et insignem attenuat deus,
Obscura promens; hinc apicem rapax
Fortuna cum stridore acuto
Sustulit, hic posuisse gaudet.

—*Hor: Carm: I. 34.*

1. Parse fully, giving both accidence and syntax, the words *sapientiae*, *iterare*, *quo*, *concūtitur*, *summis*, *posuisse*.

2. Give the present and perfect tenses indicative and the supines of the verbs *dare*, *egit*, *promens*, *sustulit*, *gaudet*.

SECTION II.

Translate:—

Nunc est bibendum, nunc pede libero
Pulsanda tellus, nunc Saliaribus
Ornare pulvinar deorum
Tempus erat dapibus, sodales.
Antehac nefas depromere Caecubum
Cellis avitis, dum Capitolio
Regina dementes ruinas
Funus et imperio parabat
Contaminato cum grege turpum
Morbo virorum, quidlibet impotens
Sperare fortunaque dulci
Ebria. Sed minuit furorem

Vix una sospes navis ab ignibus,
Mentemque lymphatam Mareotico

Redegit in veros timores

Caesar, ab Italia volantem

Remis adurgens - accipiter velut
Molles columbas, aut leporem citus

Venator in campis nivalis

Haemoniae -, daret ut catenis

Fatale monstrum. Quae generosius
Perire quaerens, nec muliebriter

Expavit ensem, nec latentes

Classe cita reparavit oras.

Ausa et jacentem visere regiam

Vultu sereno, fortis et asperas

Tractare serpentes, ut atrum

Corpore combiberet venenum,

Deliberata morte ferocior;

Saevis Liburnis scilicet invidens,

Privata deduci superbo

Non humiliis mulier triumpho.

—*Hor: Carm: I. 37.*

1. Explain the meaning of *Saliaribus*, *Cœcubum*, *Regina*, *Mareotico*, *Liburnis*.

2. Parse fully, giving both accidence and syntax, the words *dapibus*, *depromere*, *morbo*, *fortunā*, *ensem*, *com-
biberet*, *Liburnis*, *deduci*.

SECTION III.

Translate:—

Sed haec quidem, quae dixi, cor, [sanguinem] cerebrum, animam, ignem vulgo: reliqua fere singuli. Ut multi ante veteres, proxime autem Aristoxenus, musicus idemque philosophus, ipsius corporis intentionem quamdam, velut in canto et fidibus quae harmonia dicitur, sic ex corporis totius natura et figura varios motus cieri tamquam in cantu sonos. Hic ab artificio suo non recessit et tamen dixit aliquid, quod ipsum quale esset erat multo ante et dictum a Platone. Xenocrates animi figuram et quasi corpus negavit esse verum: numerum dixit esse, cuius vis, ut jam ante Pythagorae visum erat, in natura maxima esset. Ejus doctor Plato triplicem finxit animum, cuius principatum, id est, rationem in capite sicut in arce posuit, et duas partes ei parere voluit, iram et cupiditatem, quas locis disclusit: iram in pectore, cupiditatem subter praecordia locavit.

—*Cic: Tusc: Quæst: I. 10.*

1. Parse fully, giving both accidence and syntax, the words *reliqua*, *intentionem*, *motus*, *vis*, *triplicem*, *locis*, *disclusit*.

2. Give the present and perfect tenses indicative and the supines of the verbs *recessit*, *negavit*, *posuit*, *parere*.

SECTION IV.

Translate:—

Omnis magni, etiam superiores, qui fruges, qui vestitum, qui tecta, qui cultum vitae, qui praesidia contra feras invenerunt: a quibus mansueti et exulti a necessariis artificiis ad elegantiora defluximus. Nam et auribus oblectatio magna pars est inventa et temperata varietate et natura sonorum et astra suspeximus quum ea, quae sunt infixa certis locis, tum illa non re, sed vocabulo errantia: quorum conversiones omnesque motus qui animus vidit, is docuit similem animum suum ejus esse, qui ea fabricatus esset in caelo. Nam quum Archimedes lunae, solis, quinque errantium motus in sphæram illigavit, effectis idem quod ille qui in Timaeo mundum aedificavit Platonis deus, ut tarditate et celeritate dissimillimos motus una regeret conversio. Quod si in hoc mundo fieri sine deo non potest, ne in sphæra quidem eosdem motus Archimedes sine divino ingenio potuisse imitari.

—*Cic: Tusc: Quæst: I. 25.*

1. Parse fully, giving both accidence and syntax, the words *mansueti*, *auribus*, *varietate*, *suspeximus*, *eius*, *idem*, *celeritate*, *potuisse*.

2. Account for the mood of esse, *fabricatus esset, regerat, potuisset*.

SECTION V.

1. Give an account of the war with the Volsci which immediately preceded the proposal of the Terentilian Law?

2. What was the purpose of the First Decemvirate, and what of the Second? What part of the Decemviral legislation was afterwards maintained?

3. Give an account of Camillus?

4. What reasons could be urged for and against the removal from Rome to Veii?

5. What were the three Comitia? By what steps did the Comitia Tributa become practically supreme?

6. How was the senate filled? What were its powers?

SECTION VI.

1. Give an account of Papirius Cursor?

2. Give a brief sketch of the second Punic war?

3. What was the general drift of the legislation of Sulla?

4. Give an account of the Gracchi and their measures?

5. Describe the parties of the Populares and Optimates in the time of Cicero?

6. To what causes must we assign the fall of the Republic?

FRENCH.

THREE HOURS ALLOWED.

PART I.

Candidates for a third-class certificate are to translate the following extract into English, and to answer the grammatical questions thereto annexed, in the order in which they are placed. The first part is all that is required of them.

L'invention de l'imprimerie est le plus grand événement de l'histoire. C'est la révolution-mère. C'est le mode d'expression de l'humanité qui se renouvelle totalement, c'est la pensée humaine qui dépouille une forme et qui en revêt une autre, c'est le complet et définitif changement de peau de ce serpent symbolique qui, depuis Adam, représente l'intelligence.

Sous la forme imprimerie, la pensée est plus impérissable que jamais; elle est volatile, insaisissable, indestructible. Elle se mêle à l'air. Du temps de l'architecture, elle se faisait montagne et s'emparait puissamment d'un siècle et d'un lieu. Maintenant elle se fait troupe d'oiseaux, s'éparpille aux quatre vents, et occupe à la fois tous les points de l'air et de l'espace.

Nous le répétons, qui ne voit pas que de cette façon elle est bien plus indélébile? De solide qu'elle était elle devient vivace. Elle passe de la durée à l'immortalité. On peut démolir une masse, comment extirper l'ubiquité? Vienne un déluge, la montagne aura disparu depuis long-temps sous les flots, que les oiseaux voleront encore; et qu'une seule arche flotte à la surface du cataclysme, ils s'y poseront, surnageront avec elle, assisteront avec elle à la décrue des eaux, et le nouveau monde qui sortira de ce chaos verra en s'éveillant planer au-dessus de lui, aînée et vivante, la pensée du monde englouti. . . .

Dès le seizième siècle, la maladie de l'architecture est visible; elle n'exprime déjà plus essentiellement la société; elle se fait misérablement art classique; de gauloise, d'européenne, d'indigène, elle devient grecque et romaine; de vraie et de moderne, pseudo-antique. C'est cette décadence qu'on appelle la renaissance. . . . C'est ce soleil couchant que nous prenons pour une aurore.—Victor Hugo, *Notre-Dame de Paris*.

1. Parse the first three sentences of the above extract (down to "l'intelligence").

2. Give the five primitive tenses of the verbs:—*Revêt, se faisait, voit, devient, peut, aura disparu, sortira, prenons*.

3. "Qui en revêt une autre" (4th line). Can you explain this construction of the pronoun *en*, which is of frequent occurrence in French?

4. Explain the words *l', au, aux, du, des*.

5. Give the feminine of the adjectives *frais, long, public, vieux, mou, singulier, complet, blanc, malin, définitif*.

6. "Se renouelle" (3rd line). When is the final *l* or *t* thus doubled in verbs ending in *eler* or *eter*?

7. "Bien plus indélébile." "Elle n'exprime déjà plus." Explain the different uses of the adverb *plus*, and show with an example when "more" should be rendered by "davantage" instead of "plus."

8. Give the adverbs corresponding to the adjectives *cher, doux, faux, grossier, ardent, constant, vif, bon, mauvais, moins, petit, sec*.

9. Can the adjectives referring to the pronoun "on" be construed in the feminine or in the plural? Give examples.

10. Write in full:—80 pages; page 80; 300 ans; l'an 1100; 85 livres; 120 personnes.

11. Give, with suitable examples, any three important rules on the syntax of French pronouns.

12. Distinguish between *an, jour, matin, soir, and année, journée, matinée, soirée*.

Translate into French:

A year ago. The last year of his reign.

We spent a pleasant day with them. The day is not fixed.

I am going to see him this evening. I shall spend the evening with him.

I take a walk every morning. What a fine morning!

PART II.

Candidates for a second-class certificate are to answer questions 11 and 12 in Part I., together with those in Part II., and to translate the English extracts and idiomatic expressions which follow.

Grammar.

1. Give some general rules as to the place of the adjective in a French sentence, and show with examples how the meaning of some adjectives is affected by the place assigned to them.

2. Illustrate with examples the principle of euphony as applied throughout the French syntax.

3. Write ten altogether different sentences in which the verb of the subordinate proposition, whilst used in the indicative or conditional mood in English, must be construed in the subjunctive mood in French.

4. When is *ne* to be introduced idiomatically after *croire que, douter que, nier que?* Give examples for each verb.

5. Give the verb that corresponds to each of these adjectives:—*Beau, fort, faible, vieux, laid, lent, tardif, gras, jeune, gris, vert, gaillard, mou, ridicule, fou*.

6. Explain this line of Racine:—
Je t'aimais inconstant, qu'aurois-je fait fidèle?

Translation.

Rogers is silent, and it is said, severe. When he does talk, he talks well, and on all subjects of taste his delicacy of expression is pure as his poetry. If you enter his house, his drawing-room, his library, you of yourself say, this is not the dwelling of a common mind. There is not a gem, a coin, a book, thrown aside on his chimney-piece, his sofa, his table, that does not bespeak an almost fastidious elegance in the possessor. But this very delicacy must be the misery of his existence. Oh! the jarrings his disposition must have encountered through life.—BYRON.

Unfortunately, it is too much the practice of governments to nurse and keep alive in the governed their national prejudices. It withdraws their attention from what is passing at home, and makes them better tools in the hands of ambition. Hence next-door neighbours are held up to us from our childhood as natural enemies; and we are urged on like curs to worry each other.

In like manner we should learn to be just to individuals. Who can say, "In such circumstances I should have done otherwise?" Who, did he but reflect by what slow gradations, often by how many strange concurrences, we are led astray; with how much reluctance,

how much agony, how many efforts to escape, how many sighs, how many tears—who, did he but reflect for a moment, would have the heart to cast a stone? Fortunately these things are known to Him from whom no secrets are hidden; and let us rest in the assurance that His judgments are not as ours are.—SAMUEL ROGERS.

Idioms.

1. Elle en aura une attaque de nerfs.
2. Veuillez ne pas trouver mauvais que je l'en préviennent.
3. Je sais à quoi m'en tenir.
4. Là-dessous, il s'est répandu en invectives.
5. Je ne me tiens pas pour battu.
6. Il est né coiffé.
7. Vous trouvez chaussure à votre pied.
8. Ils font maigre en carême.
9. Il lui a fallu plier bagage.
10. Ne vendez pas la peau de l'ours avant de l'avoir pris.
11. Elle est vive à la riposte.
12. Il ne sait plus de quel bois faire flèche.
13. Il court sur vos brisées.
14. Ne le prenez pas en mauvaise part.
15. Partagez le différend, et qu'il n'en soit plus question.
16. Si vous n'y prenez garde, il prendra un mauvais pli.

PART III.

Candidates for a first-class certificate are expected to translate the above idioms and English extracts, and to answer in French the grammatical questions Nos. 3, 5, and 6 in Part II., as also the following:—

Literature.—I. Name the principal works of Chateaubriand. Sketch his life, and describe the tone and influence of his writings.

2. Describe the great literary movement in France under the Restoration, and show its influence upon the public mind, and the subsequent political events.

3. Name any five of the standard literary works that were first published between 1815 and 1830.

History.—1. Explain briefly the expressions:—Fédération du Champ de Mars; Girondins; Jacobins; Montagnards; Septembristes; Terroristes; Coup d'état du 18 Brumaire; Les Cent Jours.

2. Give a short account of any one of the treaties of Campo-Formio, Amiens, and Tilsit.

(To be continued.)

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The thirty-seventh annual meeting of the British Association opened on Wednesday evening in Dundee. The present is the first visit of the Association to that city.

The attendance at the present meeting, though not equal to that which has been noted at towns of larger size, is nevertheless considerable, nearly 2,000 tickets having been issued up to Wednesday evening. The principal office-bearers of the year are:—President, the Duke of Buccleuch, K.G.; Vice-Presidents, the Earl of Airlie, Lord Kinnaird, Sir John Ogilvy, M.P., Sir David Baxter, Sir Roderick Impey Murchison, Director-General of the Geological Survey of Great Britain and Ireland; Sir David Brewster, Principal of the University of Edinburgh; and Dr. James Forbes, Principal of the United College, St. Andrews. The secretaries are Mr. Galton and Professor Hirst, with Mr. Griffiths, assistant-secretary, and Messrs. Henderson, Anderson, and Gloag, local secretaries. Mr. William Spottiswoode attends as general treasurer, and Mr. Alexander Scott officiates as local treasurer. The following gentlemen are the presidents of the sections:—A, Mathematical and Physical Science, Professor Sir W. Thomson, D.C.L.; B, Chemical Science, Professor Thomas Anderson, Glasgow University; C, Geology, Mr. A. Geikie; D, Biology, Professor Sharpey; E,

Geography and Ethnology, Sir Samuel Baker; F, Economic Science and Statistics, Mr. Grant Duff, M.P.; G, Mechanical Science, Professor W. J. M. Rankine, University of Glasgow.

The inaugural meeting was attended by above 2,000 persons. The chair was taken, in the absence from indisposition of Mr. W. R. Grove, by Sir Roderick Murchison, who introduced to the audience the president elect, the Duke of Buccleuch, who delivered an address.

Professor Phillips moved, and the Provost of Dundee seconded, a vote of thanks to his Grace, and the meeting separated.

PARIS EXHIBITION.

The trial of the steam ploughs, which has been delayed by causes not very clearly explained, is announced to take place during the present month of September, at the Imperial farm at Vincennes, but the day is not yet mentioned. This, however, will not be the only occasion on which the steam ploughs of England will have an opportunity of trying their strength against each other and the rest of the world, for a private subscription has been set on foot, which, it is said, will supply the means for another and more extensive series of trials during the same month; the trials are looked forward to by French agriculturists with great interest, and there is no doubt that England will feel it, at least to as great an extent.

The manufacture of decorated porcelain and earthenware exhibits remarkable progress at the present moment, especially in France and England; the annual value of fine *faïences* produced in France is said to be ten millions of francs (£400,000), and that of china about twice that amount. One of the causes, or rather means, of the extension of the latter manufacture, is the substitution of coal furnaces in place of the costly method of wood-burning previously in use, while the introduction of medallions, slabs, and ornaments of decorated *faïence* in construction has given a great impulse to the trade, inducing the manufacturers to produce larger pieces of ware, which require special attention and study. The number of persons employed in the decoration of ceramic work in Paris alone is said to be 1,362 men and 458 women.

The number of visitors to the Exhibition is still considerably less than it was some weeks ago, the average daily attendance being, according to some semi-official returns, between 40,000 and 50,000. The number has, however, reached 60,000, and on one occasion 80,000, within the last few days, and the provinces are beginning to send up large contingents again. The inhabitants of the wine-producing provinces, however, will not be able to leave home for some time on account of the vintage, and therefore it is probable that the present month will not bring such large numbers to the Exhibition as the final month of October. Parties continue to arrive from Germany and the North, principally artizans, but including students from Upsal and other universities; these young men are in some cases dressed uniformly, and almost all wear caps, rosettes, or other objects indicating the party to which they belong.

Important corrections in the list of awards are announced from time to time, and therefore there is ground for hope that the most serious, if not all, the errors caused by the attempt to adjudge the prizes in too short a space of time will be corrected. Many people in England object to the system *in toto*, but this is not the feeling on the Continent, and while juries exist it is most important that the examination of the objects exhibited should be more complete, and the consideration of their claims to reward more careful than could possibly be the case in the short period allowed for the operations of the juries in the case of the present Exhibition.

The question of concessions has been another fertile source of complaint, and one of these has given rise to a very unpleasant act. The Imperial Commission granted to a M. Bernard the sole right of letting chairs to the

public, in consideration of his paying a certain sum of money for the privilege; the restaurant-keepers of all countries, who pay heavy rents to the Commission, placed tables and chairs outside their establishments for the use of their customers, an act which M. Bernard regarded as an infringement of his privileges, and against which he protested. Failing in his attempts, he had recourse to the tribunals, brought an action against the Imperial Commission, and obtained a verdict in his favour; in consequence of this decision, the Imperial Commission, having given due notice to the proprietors of the restaurants and cafés to remove their chairs, and the latter having declined to do so, swept them all away. An appeal has been made to the proper tribunal on the subject, but the court ruled that the Commission was compelled by the decision against it to act as it had done. It is well that occurrences of this kind should be made known and well considered before the interest has departed from them, not with any intention of throwing blame upon the Commission and officers, who have most onerous duties to perform, but in order to supply hints which may be of use on future occasions.

It is said that a beautiful cabinet, for which a grand prize was awarded to M. Fourdinois, of Paris, has been purchased for the South Kensington Museum. M. Fourdinois has in the production of this cabinet combined the art of inlaying with carving. The design being laid down upon one piece of wood, and this laid upon a piece of a different colour, say box upon ebony, for a strong contrast, the design is cut out by the ribbon saw, and the pieces thus separated being changed, you have in one case a yellow ornament on a black foundation, and in the other the reverse. The carver may now cut away the ground to any extent necessary for the relief of the pattern, and may act upon the two pieces of wood separately or in their proper relative positions as may be most convenient. There is also another important advantage in the system. Suppose it is required to decorate the face of a bracket, or any other portion of a work having an irregular outline, two pieces of wood of the colour required are selected and the ornament cut out by means of the saw; the pieces are then separated, and the desired form given to the ground piece by means of the beading plane or other tools; the carver will then operate upon the other piece, giving the ornament whatever amount of relief may be required.

SUEZ CANAL.

The Suez Canal Company have given a very complete representation at the Paris Exhibition of the work in which they are now engaged. A separate building in the park is entirely devoted to this object. The country is represented by a large plan in relief, occupying one entire room of the building. Models are exhibited of the principal machines used in digging the canal. Specimens of the soil of the isthmus through the course of the canal, and different natural productions from it, are shown. To give a general idea of the progress already accomplished, a panorama of the Canal of Suez in the state it was in April, 1867, is exhibited.

The relief plan has been made from the best maps, under the direction of the engineers of the company. Entering from Europe, we first come on the canal at Port Said; here there is a double pier, the object of which is to serve as a shelter to ships, between its two walls, with a depth of water 10 mètres. The pier on the west will be 3,000 mètres long, and half has already been made. That on the east will not extend so far; its protection is less required, as winds rarely blow from the east on this shore; 1,800 mètres are considered sufficient. The works are being pushed on in order that they may be finished before the end of next year. A whole fleet of merchant ships will be readily encompassed by its gigantic arms.

Stones are rare in the Isthmus, and the foundations of

the piers were commenced with stone brought from a quarry situated beyond Alexandria; this quarry was insufficient for the purpose, the expense of transport was great, the construction went on slowly, and was very costly, and its employment had, therefore, to be abandoned. Several very important hydraulic works elsewhere having been satisfactorily executed by means of artificial blocks, the Suez Canal Company have employed the contractors for those works to construct the piers of Port Said. These blocks are made of sand and lime from Theil; this mixture is moistened with water, and dried in moulds; two months under an Egyptian sun are sufficient to harden these blocks, and their subsequent immersion in water adds to their hardness. Each block weighs 25,000 kilogrammes. Steam cranes, with great levers of wood and iron, raise them up and put them in their places with the same ease that a mason lays a brick in a wall. The joints between the artificial blocks are filled in with small pebbles, which, assisted by the action of the sea, form a compact and solid mass. The piers, at their shore ends, are distant a space of 1,400 mètres from each other, but gradually contract to an opening of 400 mètres at their mouth. The triangle thus formed covers a large area of calm sea, where hundreds of ships ride in shelter, waiting for their turn of passing through the Isthmus. The construction of this breakwater will require 250,000 cubic mètres of blocks. At the end of April, half of these had been submerged, and the work is proceeding steadily. Along the western pier a channel of 100 mètres of breadth has been already excavated to the depth of 6 or 7 mètres, and at the present time the large ships belonging to the Messageries Imperiales anchor there.

Since the commencement of last June vessels coming and going could put in at Port Said. Having entered the port a vast parallelogram of ground appears, enclosing a surface of 36 hectares of water (about 90 acres). This great basin has four deep indentations which form secondary basins. On the west the basin of commerce, containing 4 hectares; the basin of the arsenal, 3 hectares; the basin of Four-à-Chaux, 5 hectares; and on the East the basin of the marine, 3 hectares: the total area of the port, including these basins, exceeds 51 hectares (or about 127 acres). In April, 1867, there remained to be raised 2,732,000 metres of earth, in order to excavate the port and basin of Port Said and form it to its full depth. Eight dredging machines are employed, and they each raise 1,200 mètres per day, so that in ten or eleven months the work may be expected to be finished. Port Said is the first step towards the civilization of this country. It is only a few years since M. de Lesseps and his companions made their exploring visit into the Desert, where no human being up to that time had taken up his abode, and when the land now forming the site of Port Said was covered with the waters of Lake Menzaleh. A small strip of sand, of the breadth of 200 metres, formed the outline of the sea coast, a small barrier, beaten on the one side by the waves of the Mediterranean, on the other by the waters of the lake. No tree, nor even a blade of grass, grew there sufficient to shelter the sea birds. It was here that the first stroke of the spade was given to open the cutting destined to form a passage for navigation between Europe and Asia. By the side of this cutting habitations arose, at first humble and afterwards of a more ambitious character. By degrees the band of earth increased, and the produce of the excavation filled up the marsh, and so formed a foundation for the city. The excavated earth was employed for the embankment, and the soil by degrees rose above the water, and the lake was driven back. Wooden cottages, imported from France, were erected on it, and then followed houses in masonry, specially constructed for workshops and as residences for the employés; an hotel for travellers, shops nicely ornamented, a light-house, a chapel, and hospital succeeded. The residence of the employés and workmen gave rise to native speculation, fresh food was brought in from the interior,

and a market was established, which, though humble at first, was most useful. Thus was founded the first village in the isthmus. Port Said has now ten thousand inhabitants. It is described as an agreeable city, half industrial and half picturesque; its situation is charming. Large numbers of fishing boats ply their trade on the lake, producing, it is said, a return of half-a-million francs. The history of the rise of Port Said is the history of all the other towns and workshops on the isthmus. One may form a just idea of the rapidity of their foundation and the conditions of their growth by the preceding description. The canal, on leaving the port, traverses Lake Menzaleh. Formerly this lake and the surrounding marshes were cultivated plains, endowed with that Egyptian fruitfulness so celebrated in antiquity, and which ministered to the wants of the Romans. A branch of the Nile (the Tanitic branch) washed the walls of royal towns which have now disappeared beneath its waters; some bricks and pieces of pottery and rare statues in the Cairo and Boulac Museums are all that remain of that lost race—the gloomy and still water covers their dwellings. As far as the view extends on the east, to the west, and towards the south, in going from Port Said, a sheet of water is seen, here and there dotted with verdure, which formerly were firm hillocks of ground, but are now deserted islands.

The marsh extends a great distance to the right, towards Rosetta and Daimetta, celebrated for the misfortunes of Louis IX., the chief of the seventh Crusade; to the left it stretches to the Desert, and loses itself in the sand; towards the south it occupies half the space which separates the two seas. Embarked in one of the steam-boats, which perform the daily service with regularity, the traveller can observe the general configuration of the isthmus on the line of our navigation, that is to say, between Port Said and Suez. It is a depression of land towards which the two sea coasts formerly stretched. The waters of the Mediterranean had a tendency to join the Red Sea. One may suppose that the former entered the Lake Ballah, whilst the latter is generally allowed to have reached as far as the northern extremity of the Lac Amer. A barrier hindered their union, formed of two elevations of land, containing a basin of fresh water, peopled with crocodiles, called Lake Timsah. These two elevations, called El-Guise and Sérapéum, have been cut through by the Canal Company. El-Guise was the most elevated. It was 20 mètres above the water, and formed the obstacle on the Mediterranean side. Sérapéum was eight mètres high, but the mass prevented the passage of the waters of the Red Sea. El-Guise was pierced chiefly by Egyptian fellahs. Sérapéum has been excavated by dredging machines, and the cuttings which traverse it will soon be lowered to the level of the canal.

To recapitulate. The canal of Port Said, up to the plateau of El-Guise, passes through the great Lake Menzaleh, then the Lake Ballah, now without water. It passes across El-Guise, meets Lake Timsah, then Sérapéum, another opening, which it clears in order to arrive at the incline turning towards the Red Sea, and the Lake Amer, and the Plain of Suez. The principal town, where the management of the Canal Company is carried on, is at the central point, by Timsah, between El-Guise and Sérapéum, and is called Ismaila, named after the Viceroy of Egypt. Port Said was named after his predecessor Mohammed Said Pacha, who gave great assistance in the formation of the Canal Company. Ismaila is larger and more elegant than Port Said.

Port Said is specially the centre of the workshops of the Company. Dredging machines, boats, and engines of all kinds are built and repaired there. The cargoes of the ships are received there, to be forwarded and distributed in the isthmus. It is the principal seat of the operations for the transit of merchandise, which, coming from the Mediterranean, is carried from the Port of Suez to its destination in the extreme East. The great Steam Navigation Companies, the Russian Com-

pany of Odessa, the Messageries Imperiales, and the Marseilles packet-boats, send their vessels there.

The general manager of the works lives at Ismaila; all the offices are grouped round him. The president of the company also resides there. His presence has tended much to raise the tone of the workmen in these isolated workshops, where some hundreds of men live, grouped as shipwrecked sailors, upon a rock, in the midst of an ocean of sand. He is popular and respected, and possesses those qualities which command obedience.

M. Borel and M. Lavallée, the contractors of the Suez Canal, are men of experience. They have carried on the management of the works at Ismaila, but for the accommodation of the service they have just removed. The Government of the Viceroy is represented at Ismaila by an Egyptian functionary; he inhabits the finest building in the town, erected from the plans of a former engineer of the company, now the director of bridges and highways in the Egyptian service, M. Sciam Bey. A few years since, the Lake Timsah was a basin without water, in which grew bunches of rushes burnt up by the sun; it now presents the pleasing aspect of a vast sheet of water. Ismaila was a hillock of sand, as naked and sterile as it is possible to imagine; now it is fertile and well-peopled. Fresh water is sent from thence to Port Said, eighty kilometres distant, by steam force-pumps. Two months since an Austrian ship—the first which passed the canal from Port Said on her way to Suez—by chance her name was *Primo*—put in at Ismaila. The crews landed there and collected enormous bouquets, for already flowers are numerous there. Two days after they entered, by means of the fresh-water canal, Suez, ornamented with fresh garlands of natural flowers. The desert is, indeed, changed, under the industrious band of the Suez Company, with the help of the two principal fertilisers of Egypt, water and sun. Timsah is situated where the maritime canal meets the fresh-water canal. On the plan in relief is seen a strip of verdure marking the course of the fresh-water canal, which, starting from the banks of the Nile, advances through the sands towards the isthmus. It is the land of Goshen, mentioned in the Bible where Jacob and his sons, summoned by Joseph, established pasturages in the land. It is from thence that the great emigration of Jews, led by Moses, started. Its history, related in the Holy Scriptures, can even now be followed step by step. The company has excavated in this valley the bed of a canal which connects Lake Timsah with one of the branches of the Nile, still bearing the name of Moses, in remembrance of the great Hebrew legislator who was exposed there; this is what is called the fresh-water canal, and which runs in a straight line to Timsah, and after arriving at this point, turns to the south and descends parallel with the maritime canal as far as Suez, where it falls into the live sea. In passing, it waters and supplies Ismaila; its breadth is about 15 mètres by 2 deep. By this way the company have for some time conveyed to the isthmus grain, provisions, materials, and travellers. The water which serves it there supplies the yards and population. This canal serves for the conveyance of merchandise, either from Suez or Port Said, until the maritime canal is open and free from one sea to another. The greater part of the maritime canal, which extends from Ismaila to Suez, will be occupied by a basin of great extent; here are the Lakes Amer. The waters of the Mediterranean and the Red Sea will fill it when the approaches on the north and south sides are completed. At these two extremities the earth is studded with rocks, the extraction of which occasions expense and trouble. It is most probable that the Red Sea has penetrated to these lakes at a remote epoch, for at the depth of several mètres salt deposits are found. A specimen of this substance, carved in the form of a column, has been placed at the entrance of the Suez collection in the Paris Exhibition. It only imperfectly shows the thickness of the saline bed,

which is, besides, covered in several places with mud half dry. This part is dangerous. One of the employés nearly lost his life there; he was submerged as far as his waist for 24 hours, keeping himself up by means of a plank, in great danger, till he was rescued. The Lakes Amer, which will contain 900 million mètres of water, will form an inland sea where ships will be exposed to the action of the winds and the agitation of the waves, but the company will take care to establish the necessary works to assure the security of the navigation. It is however more than doubtful if these precautions may not be unnecessary; in the mean time it is expected that the great mass of waters contained in these lakes will balance the waters of the Red Sea on one side, and the currents produced on the other side in the Canal by the winds of the North-West, which prevail during one part of the year. This fortunate disposition of nature renders unnecessary the construction of locks, which would have impeded navigation in the maritime canal. The Suez Canal, 100 mètres wide at the water-line and 8 mètres deep, will form a kind of Bosphorus, or, according to the comparison of the late Robert Stephenson, expand like a gigantic ditch, since in its excavation 60 to 70 millions cubic mètres of earth will be raised.

(To be continued.)

SMOKE CONSUMPTION IN THE POTTERIES.

The *Staffordshire Sentinel* writes thus:—

The smoke consuming clauses of the Sanitary Act, 1866, were fully explained in the *Sentinel*, when first the Act passed. We then stated that the law would come into operation in the month of August, 1867. The interval of upwards of twelve months was very properly allowed, so as to give time to manufacturers to adapt their processes of burning coal to the provisions of the law. The time thus allowed was ample, and in some towns the greatest known improvements in the combustion of coal have in the meantime been adopted by manufacturers, to the great abatement of an intolerable nuisance, and a not less saving of money; and the local authorities, with a view to giving practical effect to the law, have appointed smoke-suppression committees and salaried inspectors of the smoke nuisance. No manufactures are so prolific in the generation of smoke as those of pots and iron. In the Pottery towns both these manufactures are carried on to an immense extent, so that the smoke nuisance prevails there to a greater extent than in any part of the kingdom. The Potteries are consequently a dark and dingy district, in which the bluest skies are constantly overcast with gloom, where cleanliness is absolutely impossible, and where no man can breathe without inhaling coal smoke to a greater or less extent. To the Potteries, therefore, more than to any other part of these islands, the Sanitary Act, 1866, is a boon; and in these towns, above all others, obedience to the new and wholesome law is required by public economy and public health. If, therefore, efforts should be anywhere made to bring the statute into practical operation, it should be there. The local authorities of the district might have been expected to evince a commendable activity to ensure universal obedience, and the manufacturers to vie with each other in the adoption of the greatest improvements in the consumption of smoke. What, then, has been done? The local authorities, accustomed as they always have been to a most polluted atmosphere and to murky skies, have been about as serenely indifferent as if the skies were of Italian azure, and the air as pure as that on mountain tops. Town Councils and Improvement Commissioners have been as inactive in the matter as though they were non-existent; and as for the Chamber of Commerce it has done absolutely nothing. In all other trades, chambers of commerce take the lead in every amelioration which the staple manufactures share in common, and innumerable public advantages are monuments of their vitality and

usefulness; but that of the Potteries is like a torpid body, which only occasionally, and at long intervals, gives signs of life. It so seldom speaks, and so seldom acts, that its voice and its acts might be supposed to be those of a somnambulist. Its meetings, too, unlike those of other Chambers of Commerce, are held altogether in private.

An attempt has been made to consume smoke in the firing of pottery wares, by Messrs. Holdcroft and Wood, of Sandyford, Tunstall. Their plan has been adopted by several manufacturers in Hanley, Fenton, Tunstall, Sandyford, and other places, and it consists simply of a tube in the centre of the oven, down which, instead of escaping at the top, all the smoke and other volatile products of coal fire are forced by a downward draught caused by a subterranean connection with a high chimney adjacent. But this is done during a part only of the firing process. Our Stafford contemporary of the 6th instant, states that this simple process prevents waste and nuisance in a surprising degree, that the escape of smoke and heat is to a great extent prevented, that the smoke is mostly consumed in the downward draught, that there is a consequent saving of from three to four tons of coal per oven, and that the loss by broken saggars is reduced by one-third. Now every really intelligent student of natural philosophy must know, and does know, that a mere downward draught cannot possibly so increase the process of combustion as to prevent the escape of smoke to a surprising degree, and every practical man knows, as a matter of fact, that these details of the alleged results of the downward draught are a series of exaggerations. The downward draught, as adopted in the ovens of the above manufacturers, has just one main result, viz., that it prolongs the presence of the escaping heat, by forcing it down a central tube in the oven, and along a horizontal one under the oven, before allowing it to depart through the chimney; and by thus bringing the draught under the oven floor the lower part of the oven, which by the common process is the last to be heated, is made hot earlier. This is all that it does, but that little is important, for the heating process is thus made more equal over the oven, and consequently the wares at the bottom are more quickly fired, and thus there is a saving of coal. But the coal saved per biscuit oven is not from three to four tons, as stated, it is about two tons only. The smoke is indeed diminished, but not so much by more perfect combustion as by the diminished consumption of coal. The diminution of smoke is simply owing to the absence of the smoke of the two tons of coal that are saved; and as heat is brought to the bottom, the usual excess of heat during the usual time, so destructive to saggars, at the top, is diminished. Such are in truth the very moderate advantages of the new plan so exaggerated by our contemporary. But still the smoke of the oven is unconsumed, as is testified by the dense volumes of black elements which are seen to leave the chimneys that receive the downward draughts of the ovens.

Many alleged improvements in the firing of the potting ovens have been from time to time invented, some of which have been patented, but several of the number have been ridiculous, and all have been more or less failures. The experiments connected with them have been so costly, several of them have been so ruinous, and all of them so ineffectual, that the possibility of using up as fuel the prodigious quantity of smoke given out by a biscuit oven is commonly regarded as hopeless. But nothing is impossible that is not unnatural. It is only ignorance or indolence that despairs. To assume that so enormous a waste of most valuable fuel, and so fearful a nuisance as that which pollutes our breath, and covers us like a funeral pall, cannot be prevented, were to reflect upon the capacities of nature, and upon that science whose modern marvels past ages would have accounted miracles, and whose present state is but the infancy of its future. As in human affairs one thing leads to another, and a second step in progress is frequently one

which no man expected to rise from the first, it may be that the pottery ovens may eventually find their model in the unique kiln, which for a very different purpose is now being built at Longton. The brick is in itself the simplest and most primitive of all manufactures, however wonderful in power and in quickness of action may be the machine by which it is made; and the artistic forms which the skilled modeller has produced, and which the hands of the engraver, the painter, and the gilder have decorated, are things of beauty, which are a joy for ever; but the simple body of clay in the rude quadrangular brick, and the very composite body of clay in the form which is beautiful as the offspring of Nature, are hardened by the same identical process. In both cases a soft and plastic element, which in the human hand takes any form that is given to it, is made hard as rock by fire. The hardening of the coarser object by the new process is perfect, and in that process the expenditure of fuel is reduced in the proportion of from seven or eight to one, every particle of smoke is so consumed that the escape from a chimney is so invisible as scarcely to indicate the presence of fire, and consequently an immense saving of fuel is effected, and a great nuisance is completely suppressed. This process, which will be shortly in operation in Longton, is in other places a proved success in relation to the coarser manufacture, may it not also, by well-considered adaptations, become as complete a success in relation to the finer objects of human art? Let the reader again examine that process, as described in our last issue, and he may perhaps coincide with us, and with others, practical men, in the opinion that the probabilities of success in firing earthenware and porcelain by the new process adopted in burning bricks, are so great as to make the experiment not merely expedient but a public duty. It may be wise not to be too sanguine after so many and signal failures, but the new idea is fraught with all the elements of hope, and there are men of great practical experience, and who are not given to romance, who at present fail to discover any reason for doubt. Should this prove to be the solution of the most perplexing of all pottery problems, it will afford us profound satisfaction to have been the means of promoting it. And in that case, since the consumption of smoke generated by the fires of steam boilers and of slip-kilns is an easy process, which yields an ample return upon the outlay, and since iron furnaces may be fed with coke, there will be some hope of the potteries obtaining clearer air and brighter skies than have been ever known by their present inhabitants. At all events we trust that the experiment, under the most favourable conditions, will be made as early as possible.

Smoke can be consumed in every manufacture, as is proved by innumerable facts, and what can be done ought to be done. It is consumed almost everywhere else, and ought to be consumed here. In Mr. Doulton's pottery kilns, Lambeth, smoke is completely prevented by mechanical contrivances, so that though his works were at first specially exempted by enactment, he has effected the removal of the exemption, and voluntarily subjected himself to the law. However heavily charged with fuel his fires may be, there is no escape of smoke. The large iron district of Middlesborough, where furnaces and various ironworks abound, is an almost smokeless region. In London there is a Smoke Prevention Department of Police, and by rigorous supervision the smoke of every furnace is constantly suppressed. The nuisance is not merely mitigated, but is in every instance absolutely prevented. The breweries, the ironworks, the marble works, the largest bakeries, the saw mills, the vast coke ovens, the fires of the Bank of England and of the Royal Mint, and works in which refuse of all kinds, wet shavings, and the commonest slack are used as fuel, all are quite free from smoke. In Leicester the work of smoke prevention is devolved upon the Borough Surveyor and the police, and it is thoroughly done. In Bradford the Town Council has taken prompt and

effective measures to suppress smoke in every branch of trade, and with complete success; and in a report of the Smoke Nuisance Committee recently made, and which now lies before us, it is stated, as the result of many trials, and of observations in various parts of the kingdom, that "smoke can be completely prevented with advantage to the owner, and that this can be done with any kind of fuel, and in every description of work or manufacture." Where the law has been enforced, it is now obeyed spontaneously. Manufacturers have been required to consume their own smoke from public considerations, but they now consume it as a saving of money. The more smoke they burn, the less fuel they have to buy. From time immemorial they have thoughtlessly and ignorantly been allowing excellent fuel to escape, to deform, to defile, and almost to poison, every animal and vegetable form of life around them; but they have been compelled to learn the lesson which teaches how to detain the vagrant element at home, and to convert a mischievous enemy into a most useful friend. What they first did as a duty they now do as an act of economy. They turn smoke into gold. In this case, as in every other, self-interest is identified with public duty, and manufacturers who find smoke so lucrative an element in their own furnaces, will never more be so extravagant and so unjust as to send it forth to annoy the eyes and lungs of their neighbours, to fill the streets and houses with noxious exhalations, and to spread gloom, dirt, and barrenness over the adjacent gardens and fields.

The work of smoke prevention must be done, and if the local authorities show themselves, by inaction, to be incompetent, the interposition of the Government will be most certainly invoked and obtained. The law is not a permissive one. The requisitions are imperative, and leave no option to incompetence, negligence, or hostility. The local authorities are the best and most proper executives of the law. If they carry it into effect there will be no interference with their legitimate functions, and no needless expense will be incurred, but if they do not, a public officer will be unquestionably appointed, whose salary and whose expenses will be paid from the local rates, and who, from his less practical acquaintance with our staple trades, may show less consideration than neighbours, as men of business, may show to each other.

There are many methods of consuming smoke, any one of which is better than none, and in the event of complaint being made the justices may, without appeal, order the nuisance to be suppressed, and in default the owner or occupier is liable to the daily penalty of 20s. And it will be well for town councils and commissioners to note that by section 16 of the Sanitary Act, about to come into operation, the Secretary of State is empowered, on proof that default has been made by the local authority in "doing its duty," to authorise the chief police officer to enforce the law, the effect of which will be to make the police officer paramount to the authority which practically abdicates its office; and by section 49, the Secretary of State is also empowered, on complaint by any one, and proof that the local authority has made default in enforcing the provisions of the Nuisances Removal Act, to order the local authority to perform its duty, and, if not complied with, to appoint any person to perform it, and to direct that all expenses be paid by the local authority, together with such reasonable remuneration to the person appointed as the Secretary of State may determine. It is therefore very clear that unless the local governing bodies very promptly and effectually set about the work of giving effect to the law their authority will lapse, they will be deservedly treated as nomenities, and a Government nominee will appear amongst us, armed in his own person with full powers to carry out the law. Our local authorities must consequently very quickly make their choice, either to undertake the wholesome and salutary work of suppressing a great and most

costly nuisance, or to see themselves ignored, and the work done by a salaried stranger, all of whose costs they will undoubtedly have to pay.

Fine Arts.

IMPERIAL GRAND PRIZE IN FINE ARTS.—The Paris Academy of the Beaux Arts, or rather the five academies of the Institut of France, have awarded the Emperor's grand prize of 20,000 francs to M. Felicien David, the composer. This prize is awarded alternately in the several faculties of the Institut.

Manufactures.

MULHOUSE SOCIETY FOR PREVENTION OF ACCIDENTS IN FACTORIES.—The idea of an association, having for its object the prevention of accidents in factories in which steam is employed, is likely to be carried into practical operation in France. Twenty-two manufacturers of Mulhouse and its vicinity have met and subscribed the sum of 7,000 francs. These gentlemen employ nearly half a million of spindles, 3,340 power-looms, and 62 steam-printing machines. The Association proposes to act in various ways—by combined action and arrangement, by the communication of the best methods of preventing accidents, and by the appointment of a salaried inspector, whose duty it will be to visit all the establishments in company with the proprietors, or of some one appointed by them, and to confine his observation strictly to the one object in view. The inspector is to note all his observations in a register, and to leave a copy with the manufacturer; and he will take note of all accidents, and draw up a report from the accounts given him by manufacturers, managers, and workpeople, and he will also make an annual report to the Association. The subscription is fixed for the first year at 10frs. per 100 spindles, 25 centimes for each power-loom, and 20frs. for each steam cylinder-printing machine. The Association intends also to collect, as soon as possible, the materials for a manual for the use of overseers, foremen, and workmen, informing them of the principal precautions to be taken, and the arrangements to be made to prevent accidents of all kinds. This Association is worthy of the men of Mulhouse, who have done so much for working men by the establishment of schools, industrial societies, and economic residences.

Commerce.

THE COTTON TRADE.—Messrs. George Fraser and Co.'s circular, dated Sept. 2nd, says:—"The business in our market during the month just ended has been of a highly unsatisfactory and of very disheartening character. There appears to be a general want of confidence, and, in consequence, increased difficulty in moving off the present comparatively large production of yarns and goods. Spinners and manufacturers being unwilling, as a rule, to go into stock, continue to force sales at the best prices practicable, as they seem disinclined so far to adopt the more salutary course of closing their mills or working "short time." Thus, while there has been no decline in the price of American cotton at Liverpool, $\frac{1}{2}$ d. per lb. only in that of Permanas, $\frac{3}{4}$ d. per lb. in that of Bombay and Bengal cottons, and $1\frac{1}{4}$ d. per lb. in that of Egyptians, previously unduly high, yarns have declined from $\frac{3}{4}$ d. to $1\frac{1}{4}$ d. per lb., and goods still more in proportion. The position of the trade has consequently changed materially for the worse, and every day it be-

comes increasingly evident that an extensive resort to "short time" is imperative if prices are to be maintained at even their present comparatively low level. As a further proof of this we have only to glance at the position of the leading India markets. They are already over supplied with goods, and with excessive shipments on the way, so that the latest prices advised by telegraph do not cover the lowest prices receded to on this side. From China the accounts are much more favourable, and show fair profits, but as the stream of shipments is now being directed thither instead of to India, it is to be feared that a similar phase will be exhibited there also at no distant day. The home trade continues very inert, but more perhaps now from the general want of confidence than from any other cause, as the very splendid weather we have had of late has enabled great progress to be made with the harvest. Thus as the American and Canadian harvests have this year been also very fine and abundant, we may look for a gradual return to a lower price of food from abundance, which is the most important element of all in its bearing on the prospects of our home trade. But, also, it may be expected to be favourably affected by the great cheapness of money, and by the rise in the value of railway property, and the gradual, albeit slow, and at times uncertain, restoration of confidence in such and in kindred investments. We look, therefore, to a gradual and steady revival, ere long, in the home trade. There is nothing new bearing upon the future supply of cotton. The weather in America appears to have been propitious for the growing crops, and countenances the expectation so far of a yield of $2\frac{1}{2}$ millions of bales or over. But anything like definite estimates are premature, and can only fairly be formed when the first killing frost takes place. They will probably reach us towards November or December, when also the prospects for the India, Turkey, Egypt, and Brazil supplies may be to some extent estimated, and a notion be formed of the total supply for the following year."

Colonies.

STATE OF VICTORIA.—This colony is now exporting large quantities of wheat to England. Some of the squatters are making preparations to boil down their sheep for tallow, in absence of a market for the meat; bread is selling at from 5d. to 6d. the 4 lb. loaf; beef and mutton from 3d. to 6d. per pound; potatoes at 3d. per ton; and excellent wine, of colonial growth, at from 4s. to 5s. per gallon. Local production in all that concerns a supply of the necessities of life is considerably in excess of local consumption, and the progress of the colony is literally arrested by the want of immigration. These facts cannot be repeated too often, nor impressed too strongly upon the minds of our countrymen at home. The population of this colony is counted by hundreds of thousands only, while the country is capable of maintaining millions, with a wide field for the enterprise of the restless and the adventurous in the neighbouring colonies, and in the innumerable islands of the Pacific. What a mere handful of people has accomplished in Victoria chiefly since the year 1851, may be accepted as an earnest of what may be effected by still larger numbers, actuated by the same spirit of industry and energy, in the time to come. They have built and conferred municipal institutions upon upwards of 60 cities and towns, containing 70,000 habitable dwellings, more than 300,000 souls, and rateable property of the estimated value of £20,000,000. Outside of their limits are the rural shires and road districts to the number of 100, with 54,000 houses, 253,000 inhabitants, and rateable property exceeding £16,000,000 in value. For the spiritual wants of the people 1,700 churches and chapels have been erected, and for the education of the young upwards of 700 common

schools have been opened, upon the rolls of which the names of 70,000 children are inscribed. Some of the most important towns of the colony are brought into direct communication with the seaboard by 271 miles of railway and 3,000 miles of telegraphic wire; and 525 post-offices furnish the colonist with every requisite facility for the transmission of his correspondence. Pastoral and agricultural pursuits provide employment for 55,000 men and women, mining for 80,000 men; and 900 mills and manufactories afford occupation to nearly 10,000 persons, exclusive of several thousands who are engaged in various handicrafts in Melbourne and other large towns. It is calculated that every man, woman, and child in Victoria annually consumes manufactured articles, the produce of the United Kingdom, of the value of about £12, while the imports from other British possessions are equivalent in value to £6 per head of our population. And since there are branches of manufacturing industry which can only be successfully prosecuted in countries possessing cheap capital, cheap labour, great mineral wealth, and matchless means of intercommunication like England, it follows that the supplies of certain articles of general consumption will continue to be drawn from thence for many years to come, and that, therefore, the growth of colonial population by immigration implies the extension of one of the largest and best markets to which the parent state directs her commerce. The following statement shows the population of the colony of Victoria for the last 10 years:—In 1857, 463,135 persons; in 1858, 504,519 persons; in 1859, 530,262 persons; in 1860, 537,847 persons; in 1861, 541,800 persons; in 1862, 555,744 persons; in 1863, 574,331 persons; in 1864, 605,501 persons; in 1865, 626,639 persons; in 1866, 643,912 persons. The population of the gold fields gives a gross total of 257,264, or about three-sevenths of the population of the country. Of these 70,794 are miners, of which 20,134 are Chinese, and 50,660 Europeans.

SYDNEY SQUATTING.—Notwithstanding the losses which the squatters of Riverina have sustained latterly, they have been expending large sums of money in improving their runs. On every run from Dubbo to the Warrigo, and from the Queensland border to the Lower Barwon, dams have been erected, wells sunk, and large areas fenced in. Vast quantities of new country have also been taken up in the far west, and the flocks and herds of the squatters are now to be found almost in the very heart of the Australian continent. In those parts of the country most subject to droughts, wells have been sunk at a very great expense, and are capable of watering from 10,000 to 50,000 sheep; it is not, therefore, very probable that there will be any want of water this summer, and added to these efforts of the squatters themselves, the government, it is said, intend to lock the Murrumbidgee somewhere below the Yakoo Cutting, and thus store up an immense quantity of water. The cost of this enterprise will be about £50,000. The government will supply the water to those requiring it at a very low rate. Stock generally throughout the country is in good condition. Some valuable cattle have been imported lately in large numbers, and the improvements which have taken place in the breeding of colonial stock for some time past will doubtless continue.

PROGRESS OF SOUTH AUSTRALIA.—Returns show that the combined export and import trade rose from £3,000,000 to £6,000,000 during the ten years ended 1865; that in the same period the exports of produce increased from one and a quarter million to two and three-quarters; and that between 1858 and 1865 the area of land under cultivation rose from 264,000 acres to 660,000 acres. In no other colony, in fact, could so small a population, 160,000, point to more substantial proofs of prosperity. The amount of taxation paid through the Custom-house in this colony, during 1865-6, was 30s. per head; in New South Wales, 40s. per head; in Victoria, 32s.; and in Queensland, 76s. per head. In the matter of the bonded debt

the comparison is still more striking. South Australia, with a population of 165,934 souls, owed at the close of 1866, £751,600, or £4 10s. per head, whilst for the other colonies the returns were as follows:—

	Population.	Debt.	Per head.
New South Wales	421,000	£5,638,530	£13 8s.
Victoria	632,998	8,733,445	13 16s.
Queensland	95,100	3,021,186	31 15s.

These figures show that if there ever was a colony that ought to prosper South Australia is the one.

MELBOURNE.—The value of the imports and exports at the port of Melbourne, for the present year, to June 22, is as follows:—Imports, in 1866, £6,497,305; in 1867, £5,572,348. Exports, 1867, £5,407,536; 1866, £5,179,045, showing a decrease in the value of the imports of £924,957, but an increase of £228,491 in the exports. The following is a statement of the revenue of the Victorian railways for the month of April, 1867:—

Lines.	Passengers, Horses, &c.			Goods.			Total Revenue.		
	£	s.	d.	£	s.	d.	£	s.	d.
Murray River	8,889	9	1	14,032	10	9	22,921	19	10
Williamstown	1,150	6	9	1,715	7	3	2,865	14	0
Ballarat	7,460	15	1	8,391	10	6	15,852	5	7
Total	17,500	10	11	24,139	8	6	41,639	19	5

The total number of passengers on each line was:—

Murray River line	18,733
Williamstown line	43,069
Ballarat line	14,077
	—	76,879.

The total amount of receipts from the commencement of the year 1867 to 20th June, amounted to £247,145 7s. 6d., showing a weekly average of £10,087 11s. 4d. The revenue, from the commencement of the year to 20th June, on the Melbourne line and Hobson's Bay Company railway, was £595,590 17s. 6d., averaging £2,439 7s. 6d. weekly.

Obituary.

DR. VELPEAU, one of the most eminent surgeons that France has produced, expired suddenly in Paris last week, at the age of 73. Dr. Velpeau was the son of a farrier, of the village of Brèche, in the department of the Indre and Loire, and self-taught even as regarded the very elements of education. He afterwards studied at Tours and came to Paris, where he obtained his full degree in 1823, and a few years later was elected member of the Academy of Medicine, and afterwards of the Institut. Dr. Velpeau also published a number of important works on operative surgery, embryology, and anatomy.

Notes.

PARIS EXHIBITION JURY AWARDS.—The Abbé Moigno, in the French scientific journal *Les Mondes*, thus characterises the decisions of the juries:—“No judgments have ever been received with less favour than those of the juries of the Exposition Universelle of 1867. How can we say a word in their favour when we are met on all sides with strong protests and angry accusations, when everywhere the words incapacity, partiality, injustice, &c., are freely made use of. The members of the jury were of the highest position, but they were hurried, were overworked, and bewildered; no time was given them for arriving at a sound de-

cision, it was an absolute impossibility for them to establish a real competition between the parties, to make on the spot those trials which alone can conscientiously justify the exercise of the judgment. Ill supplied with information, they have yielded to the influence of high sounding names, personal sympathy, blind friendship, and the claims of interest; the first have become last and the last first; mediocrity has carried off the great rewards of gold and silver medals, and even the Cross of the Legion of Honour; real and admitted merit has been reduced to a bronze medal, honourable mention, and even passed over in silence."

PARTIAL DESTRUCTION OF THE CHURCH OF SAN GIOVANNI E PAOLO IN VENICE.—A portion of this celebrated edifice, which was commenced in the beginning of the thirteenth century, and contains the tombs of the Doges, has been destroyed by fire; a fine work by Titien, "The Martyrdom of St. Peter," was consumed.

SUBMARINE TELESCOPE.—A new instrument with the above name, which may be of considerable service, was tried the other day in the St. Martin's Canal, in Paris; no description is given of it, but it is probably an application of the principle of the surgical mirror. One end of the instrument is placed near to the hull of a vessel or any submerged object that is to be examined, while the eye of the observer is placed at the other end, which remains above water; the experiment is reported to have succeeded so well that pencil marks made on a sheet of paper were distinctly visible at a depth of about five feet below the surface of the water. There is no doubt that an instrument which would allow of instant examination of the hull of a vessel might be of great service, but of course any motion in the water would seriously affect its application.

THE NEW OPERA-HOUSE OF PARIS.—The exterior of the great new opera-house of Paris, or, to use its official designation, Academy of Music, was cleared of scaffolding and thrown open to public view previous to the day of the Imperial fêtes, the 15th ult. The ornamental portions are not yet entirely finished, but the work presents an interesting example of the kind of decorative architecture now in vogue; the general surface of the building is relieved by the introduction of marble columns and pannels, inscriptions in gold or coloured marble grounds, and gilt busts; the main lines of the building and the architecture, both of the front and side porticoes, are capped with bronze ornaments; that which crowns the parapet of the main face being gilt. The outline of the parapet of the front of the edifice is straight, but the two ends are to be surmounted by bronze groups, which are represented at present by painted substitutes. Crowds of observers are to be seen every hour of the day, contemplating the new monument of Paris, and criticising the work of the architect, M. Garnier.

Patents.

From Commissioners of Patents' Journal, August 30th.

GRANTS OF PROVISIONAL PROTECTION.

Animals, removing wool or hair of—2386—H. Cridland.
Bakers' ovens, heating—2348—J. Cosgrave.
Bale ties—2353—W. R. Lake.
Bed, couch, and chair combined—2338—C. F. Bower.
Boilers, preventing incrustations in—2294—H. A. Avery and G. Penabert.
Bottle racks—2384—W. Burrow.
Brewers' worts and beer, cooling—2330—C. E. Flower.
Cabs, &c.—2356—J. Day and W. Dorber.
Cages used in mine shafts, &c.—2144—J. Marley.
Capsules—2339—W. Betts.
Capsules—2340—W. Betts.
Carriages, &c., coverings for—2362—A. Leveson.
Corks, cutting—2360—J. W. Dudley.
Corsets—2358—R. Joseph.
Earth closets—2351—A. F. Baird.
Electric light—207—F. H. Holmes.
Engines, heated air—2346—F. H. Wenham.
Eyelet and paper fastener combined—2276—C. McDermott.
Fabrics, colouring, &c.—2378—C. E. Broomean.

Fabrics, covering edges of—2323—G. and J. Pilling and F. Jennings.

Fabrics, printing woven, &c.—2336—C. Holliday.

Fabrics, woven—2349—R. Cleland and R. Cunningham.

Fire-arms, breech-loading—2328—M. F. Halliday.

Fire-arms, securing bayonets on—2335—A. M. Clark.

Fire-escapes—2354—G. Clarke.

Fire-places and stove-grates—2154—T. Prideaux.

Fluids, pumping—2334—W. B. Leachman and J. Holroyd.

Fuel, artificial—1652—N. Rausch and E. L. Darlet.

Furnaces—2337—J. A. Jones, R. Howson, and J. Gjers.

Gas—2320—H. T. Everist.

Gloves, stockings, &c.—2311—A. Turner and W. Hemsley.

Grooves, cutting—2332—T. Walker.

Iron sands for smelting, preparing titaniferous—2292—W. R. Dawson.

Iron, &c., uniting and treating—2376—W. B. Adams.

Jacquard machinery—2333—W. Turney and J. Ackroyd.

Kitchen ranges—2329—J. Badger.

Knitting frames, circular—2325—H. M. Mellor.

Lamps—2342—A. W. Williamson.

Lawn-mowing machines—2315—J. Shanks and J. Cargill.

Lees, evaporating or recovering—2327—A. Swan.

Leggings and gaiters, fastenings for—2357—H. Frankenburg and S. Phillips.

Letters, &c., sealing—2372—M. Cahen.

Machines, doubling and winding—2299—H. B. Barlow.

Machines, spinning and doubling—2364—A. Lees and W. H. Rhodes.

Manure, manufacture of—2344—J. T. Way.

Mines, preventing accidents in—2350—E. Ormerod.

Oil cake—2331—J. Fawcett.

Ordnance—2343—H. Bessemer.

Packing, manufacturing—2326—S. R. Wybrants.

Paper pulp, obtaining—2356—M. Henry.

Penholders—2309—E. Mounier.

Pianofortes—2359—T. Jackson.

Pill-making machines—2347—T. Bushby.

Quoins—2321—E. Score.

Railway points and signals—2217—J. Saxby.

Railway tickets and labels, securing—2317—W. Swenson and J. E. Hellmann.

Red colouring matter—2270—T. Luthringer.

Refrigerators—2303—A. M. Clark.

Safes—2382—E. A. Cowper.

Shackles or joining links—2301—E. Newby.

Sheep, &c., composition for destroying vermin in—2305—R. Girdwood.

Ship-screw propellers—2322—J. J. Bright.

Size for warps, &c., preparing—2374—T. Tunstall.

Spades and shovels—2380—F. and G. Parkes.

Sugar-washing apparatus—2319—G. Davies.

Sulphur, extraction of from metallic oxides—2314—A. McDougall.

Teeth, moulds for casting aluminium, &c., for artificial—2368—A. M. Clark.

Vegetable substances, obtaining fibre from—2370—F. B. Houghton.

Watches—2388—A. Cohen.

Yarns, doubling—2366—J. Holroyd and W. Fieldhouse.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

Fabrics—2407—D. Howard.

Fuzes, construction of concussion—2421—E. A. Dana.

Iron and steel, manufacturing—2420—W. R. Lake.

PATENTS SEALED.

582. J. G. Stidder and R. Morris.	650. W. Young and P. Brash.
587. E. T. Hughes.	661. C. Mace.
588. G. M. Garrard.	670. W. Clark.
591. J. A. Coffey.	679. R. D. Napier.
607. J. C. Martin.	698. W. Clark.
609. T. Seeley.	788. A. H. Hart and W. Parry.
620. J. R. Breckon & R. Dixon.	956. H. A. Bonneville.
621. J. G. Tongue.	974. H. A. Bonneville.
640. S. Worley.	1586. J. F. N. B. Simons.
647. E. Lloyd.	1749. C. Sadler.
648. W. Hurrell.	

From Commissioners of Patents' Journal, September 3rd.

PATENTS SEALED.

596. W. E. Gedge.	660. G. H. Daw.
598. R. E. Keen.	663. M. Henry.
601. J. Marchent and J. Parker.	688. F. Ryding.
604. R. Thompson.	717. M. A. F. Mennons.
627. H. Barton and E. Whalley.	752. G. Smith.
628. W. Tomlinson.	757. T. Dunn.
631. C. W. Siemens.	758. E. Nougaret.
633. A. L. Normandy.	867. T. Wrigley.
635. E. K. Heaps and T. P. Moorwood.	1103. R. L. Hattersley.
637. A. Giles.	1172. A. Rigg.
638. H. W. Achgelis.	1240. E. Waterman.
641. P. R. Hodge.	1558. W. Dutton.
652. S. C. Salisbury.	1863. W. R. Lake.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

2120. W. Rowden.	2159. P. M. Parsons.
2135. W. Bullough.	2145. T. Wilson.
2146. J. White.	2169. A. V. Newton.
2149. H. Benison.	2219. C. Moriarty.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

2124. H. Moore and S. Newberry.	2131. J. Hughes, W. Williams, and G. Leyshon.
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